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§ 317. **Publications.**—1. *Report upon United States Geographical Surveys West of the one hundredth Meridian, in charge of First Lieut. Geo. M. Wheeler, Corps of Engineers, U. S. Army: Vol. VI. Botany:* This volume consists of "Reports upon the botanical collections made in portions of Nevada, Utah, California, Colorado, New Mexico and Arizona, during they years 1871-5," by Dr. J. T. Rothrock. Dr. Engelmann and Prof. Porter have contributed the account of the numerous orders to which they have given special attention; Mr. Watson, the Leguminosae; Mr. Bebb, the Willows; Dr. Vasey, the Grasses; Mr. Boot, the Carices; Prof. Eaton, the Ferns; Mr. James, the Mosses; and, finally, Prof. Tuckerman, the Lichens. Twenty-seven out of fifty new species, and ten old but rare ones have been beautifully figured in 30 plates by Sprague and Seaman, and engraved by Julius Bien, of New York City. For the convenience of those who may wish to consult these plates, we here give the list. 1. *Canotia holacantha*. 2. *Paryella filifolia* and *Petalostemon tenuifolius*. 3. *Horkelia purpurascens* and *Potentilla Wheeleri*. 4. *Petalonyx nitidus* and *Viguiera reticulata*. 5. *Brickellia longifolia*. 6. *Aplopappus cervinus*. 7. *Townsendia Rothrockii*, and *Aster Coloradoensis*. 8. *Actinomeris Wrightii*. 9. *Wyethia Arizonica*. 10. *Hemizonia Wheeleri*. 11. *Laphamia megaloccephala*. 12. *Leucampyx Newberryi*. 13. *Artemisia Rothrockii*. 14. *Pyrrhopappus Rothrockii*. 15. *Chaetadelpha Wheeleri*. 16. *Palmerella debilis* var. *serrata*. 17. *Hedeoma hyssopifolia*. 18. *Nama Rothrockii*. 19. *Gilia debilis* and *G. demissa*. 20. *Convolvulus longipes*. 21. *Halenia Rothrockii*. 22. *Fraxinus coriacea*. 23. *Abronia villosa*. 24. *Atriplex Wolfii*. 25. *Urtica Breweri*. 26. *Sisyrinchium Arizonicum*. 27. *Trisetum Wolfii*, *T. alpestre* and *Vilfa minima*. 28. *Poa Wheeleri*. 29. *Festuca Thurberi*. 30. *Notholaena Hookeri*.

The Catalogue is preceded by three short chapters of a more popular character, on the Colorado District, the New Mexican District, and Economic Botany. An appendix enumerates the plants collected in California in 1875. A good index completes the work. "As a rule, only the plants collected by the various parties of this Survey have been enumerated or described in this Report. In the masterly contribution on the Ferns alone has this rule been widely departed from." This last is Prof. Eaton's Ferns of the Southwest, a full report of all the Ferns discovered hitherto in the regions of the United States, lying west of the 105th degree of west longitude, and south of the 40th degree of north latitude. As all the species and genera not found in Gray's Manual, and even some of these are described in this report, it must be the standard reference at least till that magnificent work, the "Ferns of North America" is completed. Lieutenant Wheeler and Dr. Rothrock may well congratulate themselves on the excellent dress in which this report is presented; the paper, the type, the engravings are all worthy of the scientific ability expended on the subject matter.

We are tempted to arrange from the chapter on Arizona two contrasted pictures.

The Black Mesa is really an island of verdure raised up out of the more desert areas north and south of it. There the scene was

one of transcendent floral wealth. The conifers towered up sometimes more than a hundred feet, but the oaks were seldom over 25 feet high, but branched out vigorously. The herbaceous vegetation was luxuriant beyond anything else seen in Arizona, and here only was the striking *Sisyrinchium Arizonicum* found. *Frasera speciosa*, *Onosmodium Thurberi*, and acres of *Aquilegia chrysantha* luxuriated on the hill-sides; whilst in the cold spring water *Claytonia Chamissonis*, *Ranunculus hydrocharoides*, and *Habenaria leucostachys* were growing abundantly.

South of the Mogollon Mesa we begin the descent to the parched, superheated valley of the Gila River. Here hardness of texture and contraction of form are characteristic of the flora. The giant *Cereus* occupies the hill-sides which have a southern and southeastern exposure, towering up to height of from 30 to 50 feet. *Fouquieria* with its leafless, wand-like trunk, and its tip of scarlet flowers; *Agave Palmeri* and *A. Parryi*; and various species of *Dasyllirion*, dry rigid skeletons of plants without the living green; *Canotia*, a tree 20 feet high, a foot in diameter, with green branches provided with stomata, but no leaves, all go to complete this desolate floral landscape.

A curious omission in the Catalogue is that of *Cereus giganteus*, a grove of which forms the striking frontispiece of the volume.

We notice that Dr. Oscar Loew, a member of the Torrey Club, was a very efficient member of the expedition.

2. *Catalogue of the Davenport Herbarium of North American Ferns, Boston, Massachusetts*, GEORGE E. DAVENPORT, December, 1878. Price 50 cents. With names of donors and collectors, localities, geographical range, critical notes, and an appendix containing a list of all doubtful species, and those heretofore erroneously credited to this region. We presume that all the many amateurs and collectors of American Ferns have already possession of this incomparable catalogue. If not, we can assure them that they are much behindhand. For, while the special object in publishing it was to make the claims of the Davenport Herbarium upon the consideration of collectors more widely known, in order that the collection may be made still more complete, the critical notes are so important as to be indispensable to those who would discriminate wisely between the many variations of fern forms. In 1875, Mr. Davenport transferred his valuable collection of North American Ferns to the Massachusetts Horticultural Society, and has since been unwearied in perfecting it. Yet some of the rarer species are still imperfectly represented, and lack those essentials of good herbarium specimens, caudex and roots. These he is anxious to improve, and also to complete the collection as originally planned, by the addition of copious suites of specimens with caudex and roots, from widely different localities, so as to exhibit the plants in all stages of their development; as it is only by a careful study and comparison of the specimens in such a collection that a correct knowledge of the different species can be obtained. Fuller suites of the Ferns of Texas, Arizona, and New Mexico, and also of the rarer species from California and Florida, are particularly desired

and such specimens are earnestly solicited. The readers of the BULLETIN, we are sure, who have derived so much instruction from Mr. Davenport's notes, will feel it their duty to bear his wants in mind. He proposes now to add to the herbarium the remaining vascular Cryptogams of the United States, and offers to exchange these or ferns, if desired, whenever possible.

3. *Characeae Americanae, illustrated and described*, by TIMOTHY F. ALLEN, M.D., etc., 10 East 36th Street, New York.

Part I. *Chara gymnopus*, A. Br., var. *elegans*, A. Br. : Part II. *Chara crinita*. Wallr., var. *Americana*. In the BULLETIN, for March, 1871, (II. 9), Dr. Allen gave a list of 14 *Characeae*, and invited assistance. We are glad to see that he has not forgotten his favorite plants. The parts here published consist of one fine colored plate each, with a page of systematic description. They are to be issued monthly, and to include every species and variety known to American waters. The author offers to send the work to botanists in exchange for *Characeae* to the number of fifty specimens of each variety. The cover contains directions for collecting, which we copy, to facilitate his work. "These plants grow in fresh or brackish water, rooting in the earth on the bottom. Care should be taken to preserve the rooting parts, which sometimes bear peculiar bodies containing starch. Gather when in fruit; if dioecious, gather both sexes. The rigid forms may be dried like land plants, but the more delicate varieties should be floated on thin white paper; to this end a large mass may be carried home and single specimens selected; the paper and plant may be allowed to drain, after which the specimen must be covered with thin loose muslin and dried between layers of bibulous paper frequently changed, and subjected to very moderate pressure." Price for a single part, 25 cents; five parts for one dollar. Size, large quarto.

4. *Boston Society of Natural History. Guides for Science Teaching, No. II. Concerning a few Common Plants*, by GEORGE L. GOODALE, 2nd edition, pp. 61. Boston, Published by the Society, 1879. This little book is not a manual of instruction in botany, but an exposition of the method used by Prof. Goodale, with extraordinary success in bringing into activity and directing the observing and reasoning powers of his class of 500 teachers. In the hands of a good botanist and very intelligent teacher it may be counted upon as one of the best contributions to scientific instruction and botanical investigation that this country has produced. The pupils instructed by Prof. Goodale may be expected, wherever they may be called upon to teach, to plant the seeds of a more vigorous scientific life. The key note of the whole is that "the teaching is not to be a 'pouring in' it is simply giving the thirsty a chance to drink." Though these lectures were given to teachers, the purpose was to show them how to teach children. That ordinary children can so be taught to their delight by a gifted teacher, eliciting surprising proofs of the native acuteness of their young intellects, has been shown by the results obtained in England by Prof. Henslow, and by Prof. Goodale and others in this country.